AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. - 12. (canceled).

13. (previously presented): A numerical control system comprising:

a numerical control apparatus;

a communication cable including a data transmission cable for data transmission and a data transmission cable for data reception; and

a plurality of peripheral devices including at least one of a servo amplifier, a spindle amplifier and a remote I/O unit, the peripheral devices serially connected with the numerical control apparatus through the communication cable in order to perform time-division-based communications between the numerical control apparatus and the peripheral devices,

wherein a communication cycle in the communications between the numerical control apparatus and the peripheral devices is split into a plurality of sub cycles to process data to be processed in the communication cycle in the split plurality of sub cycles.

14. (withdrawn): The numerical control system according to claim 13, wherein an emergency stop information section is provided in a communication frame used in the communications between the numerical control apparatus and the peripheral devices, and an emergency stop information section is provided in each piece of data split into the plurality of sub cycles.

15. (withdrawn): The numerical control system according to claim 14, wherein each of the numerical control apparatus and the peripheral devices comprises a receiving controller for checking the emergency stop information section in the received communication frame irrespective of the station address specified in the transmitted communication frame in case a receiving error occurs.

16. (withdrawn): The numerical control system according to claim 14, wherein the communication frame comprises a gating off system information section for specifying a system to be gated off in the communication frame,

the numerical control apparatus specifies the system to be gated off in the gating off system information section and transmits the communication frame to the peripheral devices,

the peripheral devices performs gates off the peripheral devices per each system specified by the communication frame.

17. (currently amended): A method for setting a communication timing in a numerical control system, the numerical control system comprising: a numerical control apparatus;

a communication cable including a data transmission cable for data transmission and a data transmission cable for data reception; and peripheral devices including at least one of a servo amplifier, a spindle amplifier and a remote I/O unit, the peripheral devices serially connected with the numerical control apparatus through the communication cable in order to perform time-division-based communications between the numerical control apparatus and the peripheral devices,

the method comprising the steps of:

transmitting a port connection confirmation command to the peripheral devices in initial communications,

recognizing the connection state of the peripheral devices;

calculating the number of the peripheral devices connected and the transmission timing of the peripheral devices from the number of model codes and the order of model codes appended to a port information command when a response to the port connection confirmation command and the port information command are received from the peripheral devices; and

transmitting the calculated number of connections and transmission timing to the peripheral devices as a node count notice command and a communication timing setup command, and

transmitting the response to the port connection confirmation command to upstream nodes after the port connection confirmation command is received;

transmitting the port connection confirmation command to downstream nodes after the port connection confirmation command is received,

appending a model code allocated to the port information command in advance to transmitting ~~transmit~~ the resulting port information command to upstream nodes;

retaining the number of connections and transmission timing specified in the node count notice command and communication timing setup command when the node count notice command and communication timing setup command are received,

wherein the communication timing of the peripheral devices is automatically set via initial communications between the numerical control apparatus and the peripheral devices.

18. (currently amended): The numerical control system according to claim 13, wherein the peripheral devices, when a synchronization frame transmitted downstream from the numerical control apparatus is received in initial communications, output ~~outputs~~ a synchronization signal and ~~calculates~~ calculate the time required for a respective ~~the~~ peripheral device ~~devices~~ as the most downstream node to receive the synchronization frame.

19. (currently amended): The numerical control system according to claim 18, wherein the peripheral devices ~~calculates~~ calculate a transmission timing that considers a transmission delay between peripheral devices based on ~~the~~ connection information transmitted from the numerical control apparatus in initial communications.

20. (currently amended): The numerical control system according to claim 18, wherein the numerical control apparatus and the peripheral devices each has a transmission controller for a port 1, a receiving controller for the port 1, a transmission controller for a port 2, and a receiving controller for the port 2,

wherein the numerical control apparatus recognizes the connection state of the peripheral devices, ~~calculates~~ counts the number of the peripheral devices nodes and calculates a first ~~the~~ transmission timing of each of the peripheral devices, calculates ~~the~~ a second transmission timing in communications between the peripheral devices from ~~the~~ data volume of communication frames transmitted to the peripheral devices and ~~the~~ data volume of communication frames transmitted by the peripheral devices in communications between peripheral devices, and transmits the first and second transmission ~~timing~~ timings and the node count to the peripheral devices,

wherein the peripheral devices ~~retains~~retain the node count and the first transmission timing transmitted from the numerical control apparatus in initial communications as well as the second transmission timing ~~in communications between peripheral devices~~ in order to perform communications between peripheral devices by using the second transmission timing in the communications between peripheral devices.

21. (withdrawn): The numerical control system according to claim 13, wherein the numerical control apparatus and the peripheral devices each has a transmission controller for a port 1, a receiving controller for the port 1, a transmission controller for a port 2, and a receiving controller for the port 2,

wherein the numerical control apparatus, on occurrence of an alarm, transmits alarm information to devices connected upstream of the transmission controller for the port 1 as well as nodes downstream of the transmission controller for the port 2.

22. (withdrawn): The numerical control system according to claim 21, wherein information such as an alarm, gating off, and emergency stop included in a communication frame received by a port 1 receiving controller or port 2 receiving controller is latched and the information is appended to a communication frame to be transmitted from a port 2 transmission controller or port 1 transmission controller.

23. (withdrawn): The numerical control system according to claim 13, wherein, when the write pointer is out of synchronization with the read pointer in the communication control buffer

or when the communication control buffer is reset, a first bit pattern output after the read pointer has moved is not a specific bit pattern serving as a flag.

24. (withdrawn): The numerical control system according to claim 13, wherein dummy data is created for balancing the bit pattern of a start flag and the bit count in data transmission using optical transmission modules so as to transmit the dummy data in combination with the start flag.

25. (new): The numerical control system according to claim 13, wherein, in each cycle, the data transmission cable for data transmission transmits data in a single direction in the plurality of sub cycles and the data transmission cable for data reception transmits data in another single direction in the plurality of sub cycles.

26. (new): The numerical control system according to claim 25, wherein, in the plurality of sub cycles of the cycle, data is transmitted in a single direction only in each of the transmission cables at substantially same time.

27. (new): The numerical control system according to claim 13, wherein in each sub cycle of the cycle, data is transmitted a plurality of times in different frames.

28. (new): The numerical control system according to claim 13, wherein, in the plurality of sub cycles, at least one of the data transmission cable for data transmission and the data

transmission cable for data reception, transmits data in a single direction in the plurality of sub cycles.

29. (new): The numerical control system according to claim 13, wherein the data transmission cable for data transmission is a dedicated channel for the transmission of data and the data transmission cable for data reception is a dedicated channel for the reception of data.

30. (new): The numerical control system according to claim 29, wherein, in each of the plurality of sub cycles, each of the data transmission cable for data transmission and the data transmission cable for data reception is configured to carry data.